A review of the present state of ...

finite conductivity and the spherical shape of the earth. A review is then given of attempts at the synthesis of atmospherics, among them the theories of Fligel' (present Symposium, 27-49) and J.R. Wait (Ref.18: The propagation on very low frequencies to great distances. NBS Report v.5513, September 3, 1957).
Part II is concerned with the experimental studies of the propagation of long and ultra-long radio waves. Experimental work on the amplitude and phase of these waves as functions of distance and time is summarised. Direct measurements of the field-strength and the diurnal variations in the propagation of the GBR signal are reviewed. An account is also given of the results obtained by indirect methods, e.g. lightning discharges, analysis of the spectrum of atmospherics by the tuned receiver method and studies of the tails of atmospherics. It is concluded that the experimental study of the propagation of long and ultra-long radio waves has confirmed the basic idea of the wave-guide theory of propagation. Direct measurement of the field-strength at 3000 km from the source showed that interference effects are present up to r = 1000-2000 km and are due to the large number of modes taking

part in the propagation. As the distance increases some of the modes are attenuated and the field amplitude falls off exponentially but remains relatively large. Direct measurements of the frequency stability of the GBR signal showed that the daytime stability at r = 5000 km is 10^{-9} over a period of several months and 10^{-10} over a day or two. At the antipodes, the frequency stability is of the order of 10^{-9} per hour. Indirect measurements confirm the results of direct field measurements but in a wider frequency range, namely, 500 cps - 50 kc/s. Analysis of the waveform of atmospherics showed that the wave-guide formed by the earth and the finite-conductivity ionosphere has certain selective properties. At 7 - 15 kc/s and 100-200 c.p.s. there is energy transmission with minimum attenuation. At 2 - 3 kc/s there is maximum absorption. The attenuation at 10 kc/s is greater by 10 db than at 2 - 3 kc/s. The ratio of the maxima in the spectrum of atmospherics on 10 kc/s and 100 c.p.s. varies with distance. At 500 km the maximum on 10 kc/s is 20 - 30% larger than on 100 c.p.s., while at 2000 km this difference disappears altogether. The signal level on 7 - 15 kc/s is subject to appreciable diurnal

A review of the present state of ...

and seasonal variations. During daytime the signal level is lower than at night; during summer it is higher than in winter. The spectral region 40 - 200 c.p.s. exhibits small diurnal variations showing good propagation conditions both during daytime and at night. However, it appears that the difficulties encountered in the design of transmitting antennas on these frequencies cannot be overcome. The phase velocity in the frequency range 1 - 20 kc/s varies irregularly in the neighbourhood of c. In the frequency range 10 - 20 kc/s, the average phase velocity is practically independent of frequency and differs from c by fractions of a percent. As the frequency is reduced the phase velocity becomes appreciably greater than c, for example, at 2 kc/s the phase velocity differs by 10% from c. As the distance is increased from 1000 to 3000 km, the differences from c are appreciably reduced and are equal to a few tenths of a percent. The effective parameters of the lower ionosphere have been determined for larger distances where the zero mode predominates. The experimental values obtained for the ratio of the electron concentration to the collision frequency are found to be in good agreement with the theory of Ya.L. Al'pert and S.V. Borodina (Ref.19; present

A review of the present state of ...

Symposium, 3-26) right down to 3 - 4 kc/s. Thus, direct and indirect studies have shown the propagation of ultra-long radio waves to distances of 3000 to 5000 km as relatively stable during daytime but somewhat less stable at night. The propagation of radio waves with frequencies below 1 kc/s has not as yet been adequately studied either theoretically or experimentally. Direct measurements of the phase velocity as a function of distance and of the effect of the earth's magnetic field on the propagation of ultra-long radio waves is of major practical interest. It is stated that there are no published results in this field.

Acknowledgments are expressed to Ya.L. Al'pert for advice and to Yu.G. Ishchuk and G.M. Sosnovskaya for assistance during the writing of this paper.

There are 23 figures, 5 tables and 107 references: 10 Soviet-bloc, 1 Russian translation from a non-Soviet-bloc publication, and 96 non-Soviet-bloc. The four most recent English language references read as follows:

Ref.71: A.D. Watt, B.L. Maxwell. Observations on some low-frequency propagation paths in arctic areas. Trans. IRE v.AP-6, no.3, 308, 1958.

30934
S/570/60/000/017/004/012
E032/E114

A review of the present state of ...

Ref.81: J. Tantry. Automatic atmospherics-waveform recorder. Indian J. Phys., v.32, 367, 1958.
Ref.84: J. Chapman. The waveforms of atmospherics and the propagation of very low frequency radio waves. J. Atm. Terr. Phys., v.11, no.3/4, 223, 1957.
Ref.101: F. Hepburn. Atmospherics with very low frequency components below 1 kc/s. J. Atm. Terr. Phys., v.10, 266, 1957.

4

Card 6/6

KALININ, Yu. K., Cand Phys-Math Sci, "Propagation of Radiowaves over the ~~Nonuniform~~ heterogeneous spherical Earth." Moscow, 1961. (Central Sci Res Mine-Prospecting Inst under Gugon [illegible] RSFSR, Acoustics Inst of Acad Sci USSR). (KL, 3-61, 203).

AKIMUSHKIN, I., kand.biologicheskikh nauk; KALININ, Yu., inzh.

Patents of nature. Nauka i zhizn' 28 no.8:88-93 Ag '61.
(MIRA 14:8)

(Mormiridaea) (Ultrasonics) (Infrasonic waves)

S/203/62/002/001/008/019
I023/I223

AUTHOR: Kalinin, Yu.K.

TITLE: To the theory of electromagnetic wave propagation in a piece-homogeneous flat wave guide

PERIODICAL: Geomagnetizm i Aeronomiya, v.2, no.1, 1962, 79-85

TEXT: With the help of approximate boundary conditions of the impedance type the field of a point source in a piece-homogeneous wave guide is calculated. An exact solution for the field in a limited part of space is found by solving Green's integral equation. An equation for a path consisting of two regions is given. An equation can be induced for a path consisting of n homogeneous regions. The influence of geometrical non-homogeniety is estimated.

ASSOCIATION: Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln Akademii nauk SSSR

Card 1/3

S/203/62/002/003/008/021
I023/I250

AUTHOR: Kalinin, Yu.K.

TITLE: Deduction of the coefficient of reflection and of distorted surfaces with use of boundary conditions of the impedance type

PERIODICAL: Geomagnetizm i Aeronomiya, v.2, no.3, 1962, 476-480

TEXT: A point source is located on the axis of an orthogonal, axially symmetrical, coordinate system. The method of separation of variables leads to a sequence of mathematical operations, which are independent of the specific properties of the system investigated. Formulas are deduced for the coefficient of reflection from a curved surface which is one of the coordinate surfaces of an orthogonal coordinate system. Equations are also obtained for the poles in a waveguide system consisting of two coordinate surfaces the space between which is characterized by the minimal damping of waves. The special cases of a cylindrical, spherical and parabolic systems are investigated. The formulas may be applied in the analysis of re-

Card 1/2

KALININ, Yu.K.

Correction to the paper "Survey of the present state of studies of the propagation of ultralong electromagnetic waves." Geomag. i aer. 2 no.5:1013 S-O '62. (MIRA 15:10)
(Ionospheric radio wave propagation)

MIRKOTAN, Stanislav Fedorovich; KUSHNAREVSKIY, Yuriy Vladimirovich; KALININ, Yu.K., kand. fiz.-matem. nauk, otv. red.

[Collection of articles] Sbornik statei. Moskva, Izd-vo "Nauka." No.12 [Nonuniform structure and motions in the ionosphere] Neodnorodnaia struktura i dvizheniia v ionosfere. 1963. 162 p. (MIRA 17:8)

1. Akademiya nauk SSSR. Mezhduvedomstvennyy komitet po provedeniyu Mezhdunarodnogo geofizicheskogo goda. V razdel programmy MGG. Ionosfera.

L 18537-63 EWT(1)/FCC(w)/FS(v)-2/BDS/EEC-2/ES(v) AFFTC/ASD/AFMDC/ESD-3/
APGC Pe-4/Pi-4/Po-4/Pq-4 PT-2/GW
ACCESSION NR: AP3004025 S/0203/63/003/004/0779/0781

AUTHOR: Kalinin, Yu. K.

TITLE: Scattering cross section in meteor wake

SOURCE: Geomagnetizm i aeronomiya, v. 3, no. 4, 1963, 779-781

TOPIC TAGS: scattering, cross section, wake, ionization

ABSTRACT: A perturbation technique has been used to determine a simplified scattering cross section of a meteor wake, using the point source ionization model. For an altitude of 60-100 km magnetic field effects are neglected. Starting from the ambipolar diffusion equation, the author uses the separation of variable technique to obtain equation (1)

$$N(r)=\frac{n_0}{4\pi D}\frac{\exp\left[z\frac{v}{2D}-\sqrt{z^2+r^2}\sqrt{\frac{v^2}{4D^2}+\frac{\gamma}{D}}\right]}{\sqrt{z^2+r^2}} \qquad (1)$$

Card 1/3

where N concentration
z,r cylindrical coordinates with origin on source with z directed opposite to velocity vector V
v meteor speed
n_o number of electrons, $n_o = \alpha v$
α number of electrons per unit wake length
γ sticking probability
D diffusion coefficient

in addition equation (2) is given for the scattering cross section.

$$\sigma = \left[\frac{e^2}{mc^2}\right]^2 |n(q)|^2. \qquad (2)$$

e, m, electronic charge and mass
c speed of light
n(q) spatial spectrum
q $k_o - k_o'$, primary and secondary field wave numbers

The ambipolar diffusion mechanism of charge dissipation in the point source model is considered to be simple and graphic and is shown to agree with experimental observations. Orig. art. has: 10 equations.

L 18537-63

ACCESSION NR: AP3004025

ASSOCIATION: none

SUBMITTED: 22Mar63 DATE ACQ: 15Aug63 ENCL: 00

SUB CODE: PH NO REF SOV: 003 OTHER: 005

Card 3/3

L 10010-63 BDS/EWT(1)--AFFTC--RM/PT-2
ACCESSION NR: AP3000149 S/0141/63/006/002/0246/0256

AUTHOR: Kalinin, Yu. K.; Rodionov, Ya. S.

TITLE: Simulating the propagation of ground waves in the centimeter band

SOURCE: Izvestiya vysshikh uchebnykh zavedeniy radiofizika, v. 6, no. 2, 1963 246-256

TOPIC TAGS: ground-wave simulator, centimeter-wave simulator

ABSTRACT: The simulator used for ground-wave experiments at 3.2 cm comprised a 460 x 200-mm vinyl box filled with dry sand, a 29 x 13-mm open transmitter waveguide, and a 22 x 10-mm open receiver waveguide; the oscillator used was described by Ye. L. Faynberg (Propagation of radio waves along the Earth's surface, Academy of Sciences, Moscow, 1961), and the receiver was represented by a detector circuit terminated with a voltmeter. Dry sand was used as a "poor" conductor, and metal plates, as a "good" one. The following combinations were investigated: sand and metal surfaces separately; sand section plus metal section; sand-metal-sand (simulating airstrips); sand-metal with an oblique interface; various antenna heights. Some experiments were compared with

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L 10010-63
ACCESSION NR: AP3000149

theoretical formulae, and good agreement was found. On this basis the simulator is recommended for both the scientific and the educational applications. "The authors are thankful to Ye. L. Feynberg for discussing the results of the project and for the valuable advices. They also express their best thanks to S. V. Borisov who took part in the experimentation." Orig. art. has: 10 equations and 9 figures.

ASSOCIATION: none

SUBMITTED: 05Feb62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: CO NR REF SOV: 010 OTHER: 001

Card 2/2

KALININ, Yu.K., inzh.

Schungite-containing shales as raw materials for the production of porous aggregates. Stroi. mat. 9 no.8: 12-14 Ag'63. (MIRA 17:5)

ACCESSION NR: AP4013146 S/0203/64/004/001/0124/0130

AUTHOR: Kalinin, Yu. K.

TITLE: Time behavior of a signal reflected from a meteor trail

SOURCE: Geomagnetizm i aeronomiya, v. 4, no. 1, 1964, 124-130

TOPIC TAGS: meteor, meteor trail, reflected signal, ambipolar diffusion, electron concentration, trapping coefficient, perturbation method, diffraction

ABSTRACT: The author has used an equation of ambipolar diffusion to derive the distribution of electron concentration in a meteor trail. The electron concentration (N) is expressed by the equation

$$N(r, z) = \frac{n_0}{4\pi D} \exp\left(\frac{v}{2D} z - \sqrt{z^2 + r^2}\sqrt{\frac{v^2}{4D^2} + \frac{\gamma}{D}}\right) \Big/ \sqrt{z^2 + r^2},$$

where (z,r) are local cylindrical coordinates, v is the modulus of the velocity vector, γ the trapping coefficient, and D the coefficient of ambipolar diffusion. The spectrum of the function of N is expressed through n(q), which may be defined

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SUBMITTED: 13May63 DATE ACQ: 02Mar64 ENCL: 00

SUB CODE: AS, PH NO REF SOV: 008 OTHER: 004

Card 2/2

L 9981-65 FSS-2/EWT(1)/EWG(k)/EEC-4/EWA(h) Pz-6/Pab SSD/AFWL/AFETR/ESD(t)
JHB/RB/GM
ACCESSION NR: AP4046287 S/0203/64/004/005/0892/0897

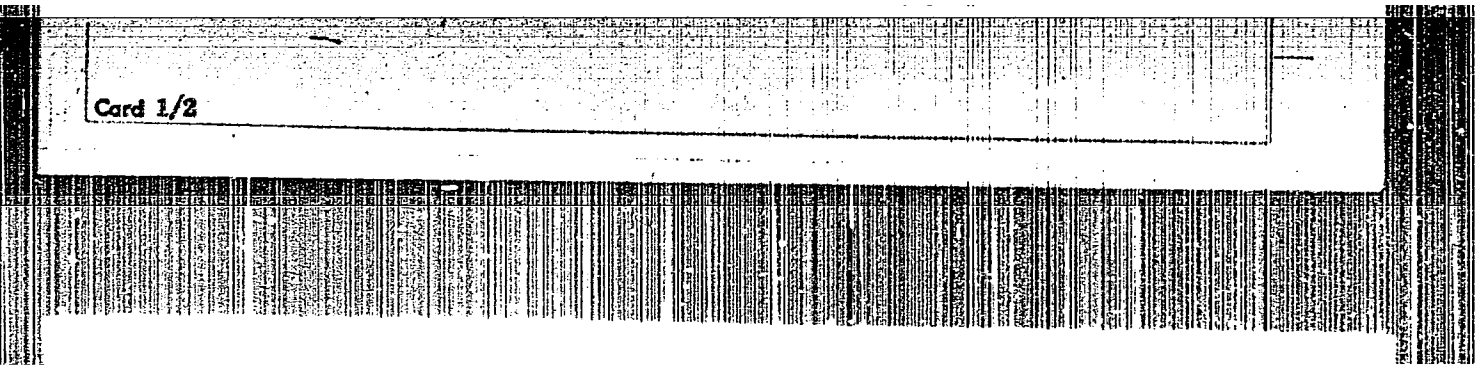
AUTHOR: Kalinin, Yu. K.

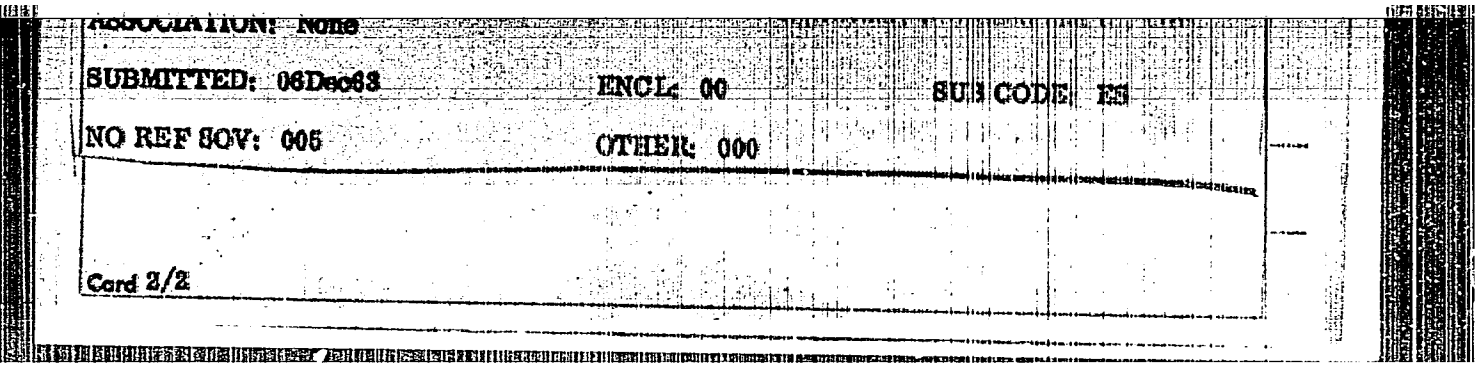
TITLE: Methods for measuring the local conductivity of soils at radio frequencies

SOURCE: Geomagnetizm i aeronomiya, v. 4, no. 5, 1964, 892-897

TOPIC TAGS: geophysics, soil conductivity, soil conductivity measurement

ABSTRACT: The author discusses the conditions for applicability of a method for measuring the local conductivity of soils. The problem involves the integration of the relative strength of the signal of a radio broadcasting station as a function of the depth to which an indicator





KALININ, Yu.K.

Use of the diffusion model of a meteor trail in interpreting data on radio wave scattering by the capsule of the U.S. spaceship MA-6 during landing. Geomag. i aer. 5 no.2:289-293 Mr-Ap '65. (MIRA 18:7)

Yu. S. Kalinin

24(7) PHASE I BOOK EXPLOITATION SOV/1700

Lvov. Universitet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii, 1956. t. II: Atomnaya spektroskopiya (Materials of the 10th All-Union Conference on Spectroscopy, 1956. Vol 2: Atomic Spectroscopy) [Lvov] Izd-vo L'vovskogo univ., 1958. 568 p. (Series: Its: Fizicheskiy sbornik, vyp. 4(9)) 3,000 copies printed.

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii.

Editorial Board: G.S. Landsberg, Academician, (Resp. Ed.); B.S. Neporent, Doctor of Physical and Mathematical Sciences; I.L. Fabelinskiy, Doctor of Physical and Mathematical Sciences; V.A. Fabrikant, Doctor of Physical and Mathematical Sciences; V.G. Koritskiy, Candidate of Technical Sciences; S.M. Rayskiy, Candidate of Physical and Technical Sciences; L.K. Klimovskaya, Candidate of Physical and Mathematical Sciences; V.S. Miliyanchuk (Deceased), Doctor of Physical and Mathematical Sciences; A.Ye. Glauberman, Doctor of Physical and Mathematical Sciences; Ed.: S.L. Gazer; Tech. Ed.: T.V. Saranyuk.

PURPOSE: This book is intended for scientists and researchers in the field of spectroscopy, as well as for technical personnel using spectrum analysis in various industries.

COVERAGE: This volume contains 177 scientific and technical studies of atomic spectrography presented at the 10th All-Union Conference on Spectroscopy in 1956. The studies were carried out by members of scientific and technical institutes and include extensive bibliographies of Soviet and other sources. The studies cover many phases of spectroscopy: spectra of rare earths, electromagnetic radiation, physicochemical methods for controlling uranium production, physics and technology of gas discharge, optics and spectroscopy, abnormal dispersion in metal vapors, spectroscopy and the combustion theory, spectrum analysis of ores and minerals, photographic methods for quantitative spectrum analysis of metals and alloys, spectral determination of the hydrogen content of metals by means of isotopes, tables, and atlases of spectral lines, spark spectrographic analysis, statistical study of variation in the parameters of calibration curves, determination of traces of metals, spectrum analysis in metallurgy, thermochemistry in metallurgy, and principles and practice of spectrochemical analysis.

Card 2/31

Card 18/31

Sci Res Inst. of Chem. Gor'kiy State Univ

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 3, p 336 (USSR) SOV/137-59-3-7308

AUTHORS: Rudnevskiy, N. K., Kalinin, Yu. S.

TITLE: Some Spectroscopic Investigations of Copper-manganese and Copper-zinc Binary Alloys in an Alternating-current Arc (Nekotoryye spektroskopicheskiye issledovaniya dvoynykh splavov med'-marganets i med'-tsink v duge peremennogo toka)

PERIODICAL: Tr. po khimii i khim. tekhnol., 1958, Nr 1, pp 11-16

ABSTRACT: Cu-Mn alloys containing 1-32% Mn and Cu-Zn alloys containing 5-9% Zn were studied in an alternating-current arc (DG-1), at an I=4 a without preliminary roasting. Both electrodes are made of the alloy investigated. The intensity of the spark lines continuously increases throughout the entire range investigated and the dependence of $\log_{10} I$ on $\log_{10} c$ for Mn lines is non-linear. In the 1.2-10% Mn range the tangent of the angle of slope of the K curve for the Mn arc line I 3054.36 is 1.9, while for spark lines it is smaller. These phenomena are explained by an increased intake of the alloy substance into the gas cloud with the increase in the concentration of Mn from 1.2 to 10%. As a result, an appreciable increase in the absolute intensity should be

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observed for Mn lines that are not subject to noticeable reabsorption with a subsequent increase in the coefficient K. In spark lines K is greater than in arc lines because the temperature of the gas cloud decreases with the simultaneous increase in the concentration of Mn and of the intake of the substance into the gas cloud. This results in a decrease in the intensity of spark lines which are the more sensitive to changes in temperature. The behavior of the spark and arc lines of Cu in the 90-100% Cu range can be explained in the same way. In Cu-Zn alloys the curve of $\log_{10} I$ as a function of $\log_{10} c$ for Zn spark line II 2502 passes through its maximum in the vicinity of 50% Zn. Measurements showed that with an increase of Zn in the alloy from 50 to 95% the temperature of the arc decreases from 5600 to 5300°K, which phenomenon correlates with the increase in the amount of alloy material passing into the gas cloud.

M. N.

5.5310
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SOV/81-59-13-45474

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 13, p 109 (USSR)

AUTHORS: Rudnevskiy, N.K., Kalinin, Yu.S.

TITLE: The Problem of the Effect of Some Factors on the Character of the Dependence of the Iron Line Intensity on Its Concentration in Cu-Mn-Alloys in an a-c Arc

PERIODICAL: Tr. po khimii i khim. tekhnol., 1958, Nr 2, pp 311 - 314

ABSTRACT: The effect of Mn on the absolute intensity of the lines of Fe in an a-c arc at the spectral analysis of Cu-Mn-alloys has been established. The effect of Mn, according to the opinion of the authors, is connected with the change in the rate of Cu-Mn-alloy substance entering the gas cloud of the arc and with the change in the discharge temperature at an increase in the Mn concentration in the alloy. It has been tried to calculate approximately the effect of Mn on the intensity of the spark lines of Fe by considering the dependence of the Fe line intensity not on the Fe concentration in the alloy but on its concentration in the gas cloud of the arc with allowance for the temperature change in the gas cloud. For this purpose the expression of the intensity of the spark lines has been

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66983

SOV/81-59-13-45474

The Problem of the Effect of Some Factors on the Character of the Dependence of the Iron Line Intensity on Its Concentration in Cu-Mn-Alloys in an a-c Arc

converted to the form $\lg I + 0.43E/kT = \lg P + \lg M_o$, where I is the intensity of the spark line of Fe; P is the value proportional to the probability of transition; M_o is the relative concentration of Fe ions in the gas cloud. M_o was found graphically in the determination of the arc temperature according to the Fe spark lines by the formula: $\lg(I/P) = -(0.625/T)E + \lg M_o$. The found M_o-values are not proportional to the Fe concentration in the alloy. Based on the M_o values a graph was plotted in the coordinates $(\lg I + 0.43E/kT)$ versus $\lg M_o$ which proved to be a straight line.

V. Zharkov

Card 2/2

S/137/62/000/005/149/150
A052/A101

AUTHORS: Kalinin, Yu. S., Kondrashova, G. P., Mironov, D. Ye., Yalymov, G. I.

TITLE: On the problem of the spectral method of quantitative determination of H in Ti

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 5, 1962, 6-7, abstract 5K41 ("Tr. po khimii i khim. tekhnol.", Gor'kiy, no. 3, 1961, 472-475)

TEXT: Optimum conditions for determining H in Ti with an allowance for the "foreign" H contained in the air were established. To plot graduation diagrams, the blackening of the H_α 6562.8 Å line was used. The width of the slit was selected 60 μ, and the inductance was 36 μhy; the possibility of applying the background as an internal standard for plotting graduation diagrams was established. To increase the accuracy of the analysis it is desirable to reduce the amount of the "foreign" H, that is, to work with a smaller gap between the electrodes. The air humidity has practically no influence on the "foreign" H concentration.

L. Vorob'yeva'

[Abstracter's note: Complete translation]

Card 1/1

GER[illegible], [illegible]; [illegible], Yu.V.; [illegible]EVSKIY, [illegible]; [illegible], [illegible]

[illegible] analysis of aluminum alloys with electric spark [illegible] and pulsed contact sampling. Zav. lab. 30 [illegible]: [illegible]-1350 '64 (MIRA 18:1)

1. [illegible]-issledovatel'skiy institut pri Gor'kovskom gosudarstvennom universitete.

S/048/62/026/007/001/030
B104/B138

AUTHORS: Rudnevskiy, N. K., and Kalinin, Yu. S.

TITLE: Influence of "third" elements on line intensity in the spectral analysis of alloys on copper base

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 7, 1962, 846-848

TEXT: The aim of this work was to assess the influence of features of the entry into the arc-discharge gas cloud, and of changes in the conditions of spectrum excitation, on the concentration dependence of the intensity of lines from ions and atoms of iron contained as impurity in Cu-Ni alloys. These contained 1.2 - 79% Ni and 0.15 - 0.42% Fe. Neglecting reabsorption, spark and arc line intensities can be described by

$$\lg \frac{I_{\text{и}}}{x} + \frac{0{,}43\,E_1}{kT} = \lg a_1' + \lg (VC),$$

$$\lg \frac{I_{\text{а}}}{(1-x)} + \frac{0{,}43\,E_0}{kT} = \lg a_0' + \lg (VC). \qquad (2),$$

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where x is the degree of ionization of the iron atoms, N is the number of iron particles, C is the iron concentration in the alloy, and V is the rate of entry into the gas cloud. If the change in line intensity observed with changing iron concentration were due only to V and excitation conditions (T,x), the curves drawn in the coordinates ($I'_{H} = \log a'_1 + \log(VC)$; $\log(VC)$) and ($I'_{A_1} = \log a'_2 + \log(VC)$; $\log(VC)$) would be straight lines. I, V, T, and x must first be determined in order to plot these curves. These quantities and their intervals under different experimental conditions are determined partly from data of other authors, and partly from the present authors' experiments. The arc line intensity of iron is shown to be a linear function of the rate of entry into the gas cloud, which is not so with spark lines. A similar result was obtained for Cu-Mn alloys. There are 3 figures.

KALININ, Yu.S., inzh.

Some parameters of foreign and Soviet diesel engines for diesel locomotives. Sbor. trud.LIIZHT no.221:91-99 '64.

(MIRA 18:8)

TUV, I.A., kand. tekhn. nauk; KALININ, Yu.V., inzh.

Device for deoiling sump waters. Trudy LIVT no.72:22-29 '64.
(MIRA 18:10)

DOBRODEYEV, A. N.; OFITSEROV, B. S.; KALININ, Yu. V.; NADYRSHIN, R. I.

Problems of the technology of manufacturing keramzit concrete slabs in the Uzbek S.S.R. Sbor. nauch. trud. NII po stroi. ASiA no.2:36-44 '61. (MIRA 16:1)

(Uzbekistan—Keramzit)
(Lightweight concrete)

GUS'KOV, K.P.; MACHIKHIN, Yu.A.; KALININ, Yu.V.

Investigation of the surface roughness of macaroni products. Izv. vys. ucheb. zav.: pishch. tekh. no.4:92-94 '61. (MIRA 14:8)

1. Moskovskiy tekhnologicheskiy institut pishchevoy promyshlennosti, kafedra soprotivleniya materialov.
(Macaroni)

GUS'KOV, K.P.; MACHIKHIN, Yu.A.; KALININ, Yu.V.

Chemical nickel plating of macaroni matrices. Izv.vys.ucheb.zav.; pishch.tekh. no.4:121-123 '62. (MIRA 15:11)

1. Moskovskiy tekhnologicheskiy institut pishchevoy promyshlennosti, kafedra soprotivleniya materialov.
(Nickel plating)

GUS'KOV, K.P.; MACHIKHIN, Yu.A.; KALININ, Yu.V.

Effect of the material of macaroni dies on the pressure in pressing. Izv. vys. ucheb. zav.; pishch. tekh. no.4: 95-97 '63. (MIRA 16:11)

1. Moskovskiy tekhnologicheskiy institut pishchevoy promyshlennosti, kafreda soprotivleniya materialov.

KALININ, Yu. YA.

SOV/96-59-10-14/22

AUTHORS: Yukalovich, M.P. (Dr.Tech.Sci.); Zubarev, V.N. (Cand. Tech.Sci.); Aleksandrov, A.A. (Engineer) and Kalinin, Yu.Ya. (Engineer)

TITLE: An Experimental Determination of the Specific Volumes of Water up to Pressures of 1200 kg/cm²

PERIODICAL: Teploenergetika, 1959, Nr 10, pp 74-77 (USSR)

ABSTRACT: Available information about the thermo-dynamic properties of water at high pressures is inadequate and experimental data on the specific volume of water were required. The data are needed both to formulate tables of specific volume, and also to calculate calorific values of the specific heat at constant pressure and of the enthalpy of water at high pressures. Similar work is in hand in the U.S.A. by Kennedy, Knight and Holser. The equipment used was very similar to that described by Kirillin in Teploenergetika Nr 11, 1957. The piezometer was made of steel 1Kh18N9T, whose thermal coefficient of expansion is tabulated. Precautions taken to ensure accuracy of the experiments are described in considerable detail. Specific volumes of water were determined at six temperatures, and the experimental data are tabulated.

Card 1/2

The maximum error of the test data calculated in the usual way is 0.06-0.08%, the latter figure relating to the maximum test temperature. The experimental data obtained in this work are compared with published American and Soviet data at each of the six temperatures. Agreement between the present work and published American work is good; such differences as there are lie within the total experimental error of the two sets of data. At low temperatures there is good agreement with the published Soviet data, but differences become appreciable at higher temperatures. This is evidently because values of specific volume at high pressure previously published were obtained by extrapolation of experimental data obtained at a pressure of 300 kg/cm². The previously published Soviet data of Rubalovich appear to be in need of correction. There are 2 tables, 1 figure and 8 refs.

Card 2/2

ASSOCIATION: Moscow Power Institute (5 Soviet, 3 English).
(Moskovskiy energeticheskiy institut)

VUKALOVICH, M.P., doktor tekhn.nauk; ZUBAREV, V.N., kand.tekhn.nauk; KALININ, Yu.Ya., inzh.; ALEKSANDROV, A.A., inzh.

Equation of state of water based on experimental data. Teploenergetika 8 no.4:76-81 Ap '61. (MIRA 14:8)

1. Moskovskiy energeticheskiy institut.
(Water—Thermal properties)
(Equation of state)

UZINA, R.V.; DOSTYAN, M.S.; GUSEVA, V.I.; KALININA, A.A.

Latex-carbon black compounds for impregnation of tire cord. Kauch. i rez. 16 no.12:11-18 D '57. (MIRA 11:3)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.
(Rubber) (Tire fabrics)

USSR / Farm Animals. General Problems Q

Abs Jour: Ref Zhur-Biol., No 5, 1958, 21439

Author : Kalinina A. A., P'yanovskaya L. P.
Inst :
Title : The Effect of Increased Rations of Corn Silage on the Quality of Milk (Vliyaniye povyshennykh dach kukuruznogo silosa na kachestvo moloka)

Orig Pub: Sots. tvarinnitstvo, 1957, No 2, 27-28

Abstract: An experiment was conducted for 40 days on two groups of cows of the Simenthal breed. The cows of the first group during the first 10-day period consumed 31.5 kg. of silage per day, during the second 10-day period and in the beginning of the third one, 28 kg., and in the third and fourth 10-day periods, 35 kg. each. During the same periods of time, the cows of the second group consumed 25, 23 and 23 kg.,

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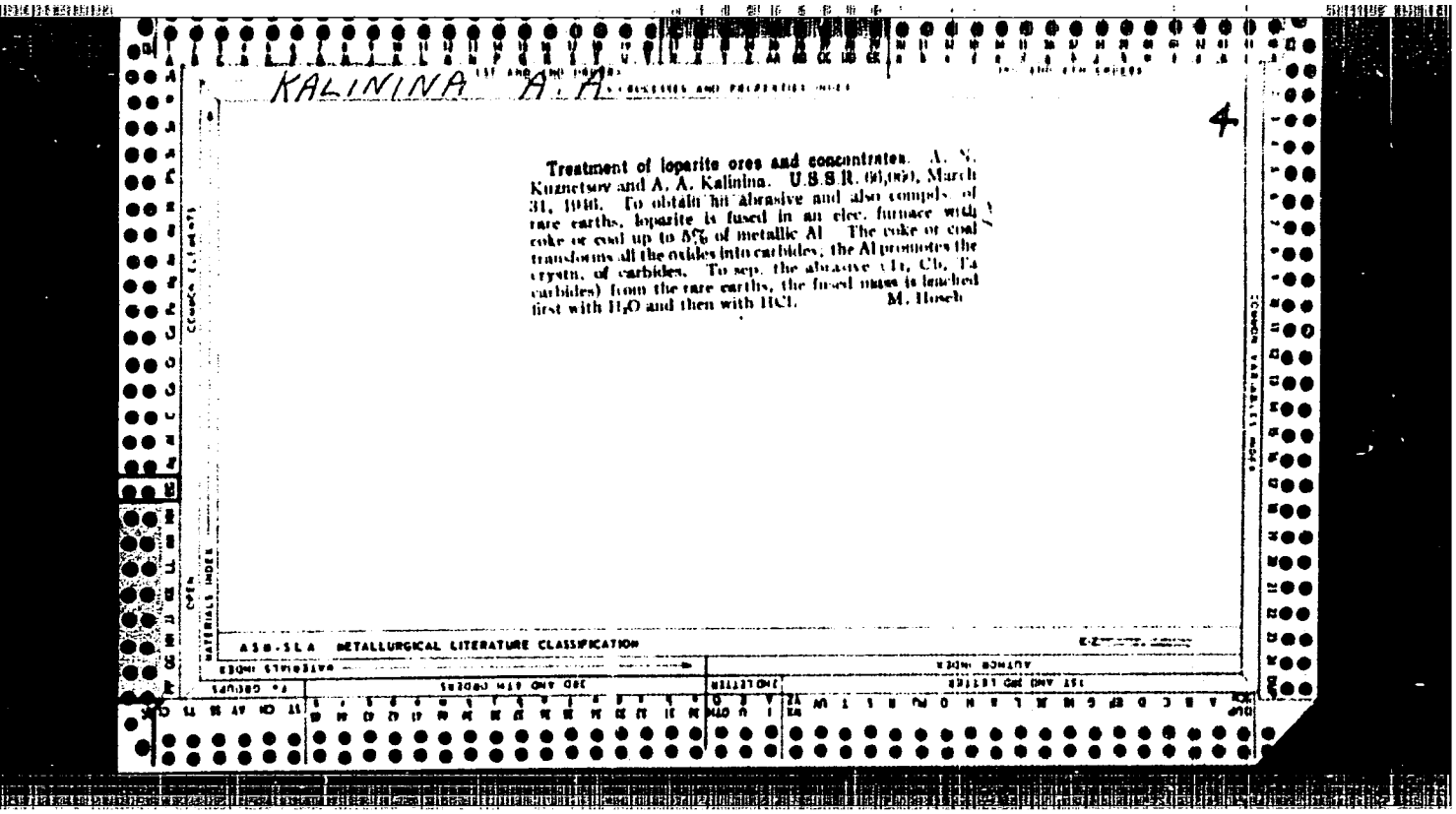
PAKHUCHIY, V.M., nauchnyy sotrudnik; KALININA, A.A., nauchnyy sotrudnik; PYANOVSKAYA, L.P., nauchnyy sotrudnik.

Chemical conservation of green fodder. Nauka i pered.op.v sel'khoz. 7 no.9:10-11 S '57. (MIRA 10:10)

1. Ukrainskiy nauchno-issledovatel'skiy institut zhivotnovodstva.
(Feeding and feeding stuffs)



KALININA A. A.

4

Treatment of loparite ores and concentrates. A. N. Kuznetsov and A. A. Kalinina. U.S.S.R. 60,(69), March 31, 1946. To obtain hit abrasive and also compds. of rare earths, loparite is fused in an elec. furnace with coke or coal up to 5% of metallic Al. The coke or coal transforms all the oxides into carbides, the Al promotes the crystn. of carbides. To sep. the abrasive (Ti, Cb, Ta carbides) from the rare earths, the fused mass is leached first with H_2O and then with HCl. M. Hosch

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

25(1)

AUTHORS: Kapustina, T.P., Candidate of Technical Sciences, Docent, and Kalinina, A.A., Candidate of Technical Sciences

SOV/146-58-4-21/22

TITLE: The Problem of the Polishing Process Mechanism

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Priborostroyeniye, 1958, Nr 4, pp 144-150 (USSR)

ABSTRACT: According to excisting opinions, polishing of glass is connected with mechanical surface dispersion processes, chemical and physical-chemical phenomena and also plastic deformations of the glass layers. Presently, it is difficult to decide which one of the aforementioned processes determines the productivity of the polishing process and provides the required surface properties. During the past years studies of the mechanism of the polishing processes of glass and crystals were conducted in the laboratory of glass technology of the Leningradskiy institut tochnoy mekhaniki i optiki (Leningrad Institute of Precision Mechanics and Optics) in cooperation with VNIIASh. The

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investigations dealt with the problems of proving the possibility of the gradual transition from a ground surface to a polished one by means of subsequent processing the glass with powders of decreasing grain size; the connection between the nature of processing powders and the structure of the polished surface; and the presence of particles of the polished material in the wear products of the polishing process. The development of a method and a partial solution for the first problem was published in the paper by the aforementioned authors [Ref 1]. In the present paper, the authors consider above all the second and the third problem. The influence of the nature and the grain size of the surfacing powder on the surface structure was conducted by means of an ultramicroscope. The investigation of abrasive wear products of the polishing process was performed for the first time by X-ray structural analysis. Since the X-ray structural analysis of glass is too difficult, fluorite and icelandic spar were used. The authors refer to their pre-

vious paper [Ref 17], in which they considered in detail the gradual change of the surface structure of glass when treating it with powdered monocorundum of the grain size ranging from M14 to M1. The surface was inspected by means of a microscope with a phase contrast head and micro-interferometer MII-1. During a further investigation for obtaining a finer surface, monocorundum powder M0.5 and hematite with an average grain size of 5-3 microns were used, as well as a number of polishing powders. An ultramicroscope was used for determining the characteristics of surfaces, treated with these powders. For obtaining comparative results, all polished surfaces investigated by means of the phase contrast method and the MII-1 interferometer, as mentioned in the preceeding paper, were studied additionally by the ultramicroscope. The authors then explain the arrangement of the ultramicroscope, as shown in Figure 1. This method is based on the scattering of light by small particles. It was first used by Kumanin and Kuznetsov for controlling

a polished surface, [Ref 2]. The light source in the aforementioned ultramicroscope was a motion picture projector lamp of 300 w. This lamp was lateron replaced by a high-pressure lamp of greater brightness. The observation and the photography were conducted with magnifications of v_{ob}=6, G_{ok}=15. The authors describe the photography system used for recording the pictures from the ultramicroscope. An isopanchromatic film with a sensitivity of 130 degrees according to GOST was used. The film was processed in the photometric device as described in Figure 2. The photometric device was composed of a light source OI-7 and the receiver device from the reflexometer NRG-1 [Ref 3]. The measurements were conducted in 3 zones of the frame. The measuring error had a magnitude of 10%. In Table 1, the magnitudes of K (the quantity of passing light) for surfaces treated with different powders are shown. Figure 3 shows micro-photographs performed by the ultramicroscope with a photohead of a number of surfaces after treating them with mono-

corundum powders of different grain size. For determining the influence of the powders used for treating the surfaces on the structure of the polished surfaces, samples were compared which were polished with powders of monocorundum, hematite, thorium oxide, and a number of other materials of identical grain size. Table 2 contains a list of magnitudes of K for surfaces treated with the aforementioned powders. Table 2 shows that the magnitude of K for monocorundum and hematite is close, 8.5 and 11.0. Better results were obtained using crocus (60.5). More perfect surface structures were obtained when using rare earth oxides with laminar-shaped grains. The magnitude of K was highest for "polirit" (82.5). In this way, besides by the grain size, the surface structure is influenced by the type of the powder, characterized by its hardness and grain shape. This shows the great importance of mechanical phenomena during the polishing process. Figures 4A and 4B show micro-photographs of some surfaces taken with the ultramicroscope. The authors then explain

the investigation of abrasive wear products obtained during the polishing process. The collected samples were subjected to an X-ray analysis by Engineer V.I. Kudryavtsev (VNIIASh). The investigation was conducted with copper and cobalt radiation. Figure 5A shows a skiagram of pure fluorite, wear products of fluorite with chromium oxide, and pure chromium oxide. In the skiagram of fluorite wear products, obtained by chromium oxide processing, some intensive lines are visible which belong to fluorite. The same analysis was conducted with icelandic spar crystals as shown in Figure 6. The authors arrive at the following conclusions: It has been established that it is possible to change continuously from a ground surface to a polished one, whereby the influence of the grain size and the nature of processing powders on the structure of the polished surface has been determined. An attempt was made for determining quantitatively the unevenesses of a polished surface. In the abrasive wear products of some crystals the traces of the materials to be polish-

ed were found. Further, the conclusion may be made that the conception "polished surface" is not synonymous and requires a more precise definition. As it was shown in this paper, glass polished with powders different according to nature and grain size, produce considerable different light scattering effects. Therefore, it is necessary to consider this in optical-mechanical devices with a great light absorption. There are 2 diagrams, 5 microphotographs and 3 Soviet references.

ASSOCIATION: Leningradskiy institut tochnoy mekhaniki i optiki (Leningrad Institute of Precision Mechanics and Optics)

SUBMITTED: July 1, 1958

KALININA, A.A.; SHAMRAY, F.I.

Physicochemical investigation of the section SiC - B_4C of the system Si - B - C. Trudy Inst.met. no.5:151-155 '60. (MIRA 13:6)
(Silicon carbide)
(Boron carbide)
(Powder metallurgy)

S/032/60/026/008/022/046/XX
B020/B052

AUTHORS: Kalinina, A. A., Smirnova, M. G., and Rempen, G. A.

TITLE: News in Brief

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 8, p. 949

TEXT: A rapid method was developed for the analysis of fluxing agents. It is based upon the fusion of a weighed-in portion of a fluxing agent with a borax-potassium-sodiumcarbonate mixture, the photocolorimetric determination of silicon after the reduction of the silicon-molybdenum complex by thiourea against molybdenum blue, and the decomposition of the fluxing agent by an HF-, HNO_3-, and H_2SO_4 mixture. The totality of the oxides of trivalent metals were determined by back-titration of the Trilon B excess by an iron chloride solution in the presence of salicylic acid. Iron was photocolorimetrically determined in the form of a sulfosalicylate complex, and aluminum was calculated from the difference. Calcium and magnesium were successively titrated by Trilon B in the presence of chrome dark blue. Calcium is determined in the presence of magnesium,

S/032/60/026/008/022/046/XX
B020/B052

after the latter has been precipitated by lye. Sugar is added for reducing the calcium adsorption. Magnesium is determined after calcium in the presence of an ammoniacal buffer mixture. After the separation of aluminum fluorine is titrated against alizarine by a zirconium salt solution.

UZINA, R.V.; SHMURAK, I.L.; DOSTYAN, M.S.; KALININA, A.A.

Effect of the compounding formula of the resorcinol-formaldehyde resin used in compositions for cord impregnation and the conditions of its condensation on the adhesive strength of rubber-cord systems. Kauch.i rez. 20 no.7:24-28 Jl '61. (MIRA 14:6)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.
(Tire fabrics—Testing) (Phenol condensation products)

45257

18,1000

S/226/62/000/006/008/016
E193/E383

AUTHORS: Antonova, N.D., Kalinina, A.A. and Kudryavtsev, V.I.

TITLE: Preparation and some properties of materials based on silicaon carbide with boron and aluminium additions

PERIODICAL: Poroshkovaya metallurgiya, no. 6, 1962, 54 - 60

TEXT: The object of the present investigation was to explore the possibility of producing dense, sintered SiC compacts by using small quantities of boron or aluminium as the bonding agent. The experimental specimens (solid cylinders, 9 mm in diameter, 20 mm long and hollow cylinders with o.d. 20 mm, i.d. 10 mm, 20 mm long), containing 1, 3 and 5% B or 5, 7.5 or 10% Al (alloys B_1, B_2, B_5, A_5, $A_{7.5}$ and A_{10}, respectively) were prepared by sintering under pressure. The density of the sintered compacts was the main criterion of their quality. The highest density of alloys B_1, B_3 and A_5 was attained after sintering at 2 150 °C under a pressure of 450 kg/cm^2, the best results for the remaining alloys being obtained by sintering at 2 100 °C under the same pressure. The sintering conditions were rather critical, particularly for materials

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with a high boron or aluminium content, since a slight increase in the temperature caused a considerable proportion of the liquid phase to be squeezed out of the compact. The density of the B_3, B_5, $A_{7.5}$ and A_{10} alloys ranged from 90 to 97%, that of the B_1 and A_5 alloys not exceeding 85%. The specific gravity of the compacts varied between 3.148 g/cm^3 for the A_{10} alloy and 3.222 g/cm^3 for the B_1 alloy. The microhardness of the SiC-base solid solutions varied between 2 970 and 3 390 kg/mm^2. The highest and lowest values of other properties are given below: crushing strength - 72 kg/cm^2 (alloy B_5) and 15 kg/cm^2 (alloy B_1); electrical resistivity (Ωcm) - 5-38 (alloy B_3) and 0.1 - 0.7 (alloy A_{10}); resistance to overheating in terms of weight increase, g/cm^2 h x 10^{-3} = 0.43 (alloy A_5) and 0.03 - 0.1 (alloy B_3); resistance to thermal shock - alloys B_3, B_5 and A_5 withstood more than 100 tests consisting of oil-quenching from 1 200 °C, whereas alloys B_1, $A_{7.5}$ and A_{10} failed after 5 - 18 tests; thermal-expansion coefficient at 100 °C (α x 10^{-6} °C^{-1}) = 2.76 (alloy A_{10}) and 2.21 (alloy B_3).

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Preparation and some properties S/226/62/000/006/008/016
E193/E383

The results so far obtained indicate that alloys B_3, B_n and $A_{7.5}$ have the most promising properties and can be recommended as materials worth trying in various development work.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut abrazivov i shlifovaniya, g. Leningrad
(All-Union Scientific Research Institute of Abrasives and Abrasion, Leningrad)

SUBMITTED: April 14, 1962

Card 3/3

Kalinina, A.A.

AID Nr. 983-6 5 June

HOT COMPACTING OF SiC-BASE MATERIALS (USSR)

Dombrovo, I. V., A. A. Kalinina, and V. I. Kudryavtsev. Poroshkovaya metallurgiya, no. 2, Mar-Apr 1963, 80-87. S/226/63/000/002/011/014

The effect of powder grain size, temperature, and pressure on the microstructure, phase composition, and properties of articles hot-compacted from new SiC-B_4C-base refractory materials, including the C-8 alloy [unidentified], has been studied at the All-Union Scientific Research Institute of Abrasives and Polishing. The grain size of the main fractions of SiC and B_4C powders varied from 80 to 7 and from 40 to 0 μ (320 mesh), respectively. Compacting was done at 1540 to 2300°C. The compacts contained 8.10 to 10.00% B, 28.03 to 29.45% C, 0.60 to 1.90 free C, 58.28 to 60.00% Si, and 2.51 to 3.09% impurities, and consisted of two phases: α, an SiC-base solution, and β, a B_4C-base solid solution. With decreasing size of the powder particles, the boron content of the α-phase was found to be higher, SiC-II transformed more readily to SiC-III, and the structure of compacts was finer and more

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HOT COMPACTING OF SiC-BASE MATERIALS [Cont'd] S/226/63/000/002/011/014

homogeneous. For example, in compacts made of SiC and B_4C powders with respective main fractions of 50-40 and 14-10 μ, only 30% of the SiC is transformed into SiC-III, and the α-phase contains 2.14% B; while in compacts with respective main fractions of 7 and 5 μ all SiC is transformed into SiC-III, and the α-phase contains 3.90% B. The compression strength of compacts increased with increasing difference in the particle size of the powders. Articles compacted from 80 μ SiC and 0-40 μ B_4C powders had the highest compression strength (130 kg/mm^2). Thus, the properties of hot compacted articles can be regulated by changing the grain-size ratio of the initial powders. In the hot pressing of SiC and B_4C powders, the shrinkage of compacts (caused by the formation of a liquid phase) starts at 1550°C and is completed at a temperature between 1980 and 2050°C, whereupon the compacts have a porosity of 1 to 3%. An increase in temperature from 1980 to 2300°C during shrinking results in grain growth, a decreased amount of the eutectic between grains, and

AID Nr. 983-6 5 June

HOT COMPACTING OF SiC-BASE MATERIALS [Cont'd] S/226/63/000/002/011/014

partial decomposition of the α-phase, with boron concentration in it dropping from 3.79 to 2.95% and free carbon in the specimen increasing from 1.4 to 18.70%. A specific pressure of 50 and 80 kg/mm^2 was found to be sufficient to produce a uniform density with a volume porosity of 2.3 to 3.6% in compacts with a friction-surface-to-cross-section ratio of less than 5. More than 170 kg/mm^2 is required for compacts having a ratio of 7.5. [MS]

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ANTONOVA, N.D.; KALININA, A.A.; KRYAVTSEV, V.I.

Production and certain properties of materials on a basis of silicon carbide with additions of boron and aluminum. Porosh. met. 2 no.6:54-60 N-D '62. (MIRA 15:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut abrazivov i shlifovaniya, Leningrad.
(Ceramic metals)

KALININA, A.G.

USSR/Cultivated Plants - Grains

M-4

Abs Jour : Ref Zhur - Biol., No 1, 1958, No 1502

Author : A.I. Kozlovskiy, A.G. Kalinina
Inst : Not Given
Title : Selection of Varieties of Corn for Seed and Ensilage for Cultivation in Siberia.

Orig Pub : Kukuruza, 1956, No 6, 28-30

Abstract : Results of experiments on corn varieties by the food production department of the Siberian National Research Institute for livestock raising (conducted 1954-1955). In all the rayons of the steppe and forested steppe zone of Siberia, by cultivating medium early corn varieties (Voronezhskaya 76, Pervomayskaya, Perlovskaya) a good yield of cobs in the lactic-waxy stage of ripeness and green stuff for the silo can be obtained. For the purpose of dry seed cultivation the local early varieties and populations (local white, white mosaic) are useful. Late varieties yield very low crops of cobs having lactic and lactic-waxy ripeness (54 centners per hectare) and are cultivated especially for the silo and for green feed (the yield of green stuff is 500 centners per hectare and more).

Card : 1/2

Card : 2/2

SAFRONOV, A.F.; KALININA, A.I.

Classifying ores by their average size in Magnitogorsk Combine ore dressing plants. Obog.rud 3 no.5:43-46 '58.
(MIRA 12:5)
(Magnitogorsk--Ore dressing)

GAL'PERIN, A.I.; KALININA, A.I.

Technology of the automatic production of piston rings from a steel band. Avt. prom. no.2:37-41 F '61. (MIRA 14:3)

1. Nauchno-issledovatel'skiy institut tekhnologii avtomobil'noy promyshlennosti.

(Piston rings)

KALININA, A. M.

Investigation of the structure of some silica gels by the method of small-angle scattering of x-rays. B. A. Porai-Koshits, A. M. Kalinina, and V. N. Filipovich. *Doklady Akad. Nauk S.S.S.R.* 86, 985–8(1952); cf. Augul, *et al.*, *C.A.* 45, 4995*f*, 5483*g*.—The small-angle scattering method was applied to 3 samples previously studied by the vapor-adsorption method: (I) homogeneously porous with a mean pore radius of 40 A., (II) homogeneously coarse-porous with a most probable effective pore radius of 100 A., and (III) inhomogeneously porous with the pore radius varying from about 15 to 150 A. The scattering angle φ varied from 0.5′ to 2°30′. Plots of log I (scattered intensity) as a function of φ^2 are linear for I and II, in accord with their monodispersity, and nonlinear for the polydisperse III. Calcn. of the vols. of pores of radius R, by the tangent method (*C.A.* 44, 7048*h*), gave the vol. distributions (%): I, 30 A. (87.5%), 55 (10), 87 (2.5); II, 55 A. (78%), 88 (14), 110 (8); III, 52.5 A. (32%), 126 (27), 240 (41). This gives a mean R, for I 34 A. (as against 40 A. by adsorption), and for II 64 A. (as against 100 A.). The agreement is good for I and acceptable for II. This agreement proves a posteriori that the small-angle scattering method has given the size distribution of the pores and not of the particles, at least in the case of I and III. This conclusion is less certain with respect to II. Numerical estn. of the accuracy of the x-ray detn. of R gives, for the 1st (min.) R an error of ~ 3 A., i.e. about 5%. N. Thon

4-14-54
mf

SMOLENSKIY, G.A.;AGRANOVSKAYA, A.I.;KALININA, A.M.;FEDOTOVA, T.M.

Seignettoelectric properties of $(Pb,Ba)SnO_3$, $Pb(Ti,Sn)O_3$ and $Pb(Zr,Sn)O_3$ solid solutions. G.A.Smolenskii and others.Zhur. tekh.fiz. 25 no.12:2134-2142 O '55. (MLRA 9:1)

(Ferroelectric substances)

KALININA, A.M.

"Interactions of Cerium Dioxide With the Oxides of Alkaline Earth Metals," by E. K. Keler, N. A. Godina, and A. M. Kalinina, Zhurnal Neorganicheskoy Khimii, Vol 1, No 11, Nov 56, pp 2556-2560.

Results of an investigation of the interactions of cerium dioxide with the oxides of alkaline earth metals are reported. It is pointed out that alkaline earth cerates are good dielectrics and that little information on their synthesis and properties has been available hitherto.

S/4M./305

Калинина, А.М.

20-2-36/60

AUTHORS: Kalinina, A. M., Poray-Koshits, Ye. A.

TITLE: On the Existence of Metakaolinite and on the Nature of the Exothermal Effects of Alumina (K voprosu o sushchestvovanii metakaolinita i prirode ekzotermicheskikh effektov glinozema)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 2, pp. 365-368 (USSR)

ABSTRACT: As it is known ,kaolin exists in its not annealed state as crystals of $Al_2O_3.2SiO_2.2H_2O$. Heating of kaolin leads to dehydration, which is accompanied by an endothermal effect at a temperature of 450 - 600°. Some scientists maintain that kaolin there is decomposed into free aluminum oxides and silicon oxides, whereas others state that as result of the dehydration an amorphous metakaolinite is produced. The first exothermal effect (970°) again is interpreted in different ways: either by crystallization of the amorphous alumina, or by decomposition of metakaolinite into free alumina and silicon earth with subsequent crystallization of γ-Al_2O_3,

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On the Existence of Metakaolinite and on the Nature of the Exothermal Effects of Alumina

kaolin. The absence of a crystallization of alumina into the γ_n-modification in the kaolin after the dehydration (400 - 600°) suggests a close relation between the oxides because the free alumina actually should crystallize into the γ_n-modification at 600 - 850°. The radiographs of the not elutriated kaolin, obtained in the temperature range of 600 - 1400°, show that in addition to the mullitisatation, it is the formation of the γ_n-alumina which is the basic process causing the first exothermal effect of kaolin. The γ_n-alumina crystallization, however, can take place only after a (possibly partial) destruction of the complex $Al_2O_3 \cdot 2SiO_2$. There are 4 figures, and 15 references, 12 of which are Soviet.

20-2-36/60

On the Existence of Metakaolinite and on the Nature of the Exothermal Effects of Alumina

ASSOCIATION: Institute for the Chemistry of Silicates, AS USSR (Institut khimii silikatov Akademii nauk SSSR)

PRESENTED: December 7, 1956, by M. M. Dubinin, Member of the Academy

SUBMITTED: December 6, 1956

AVAILABLE: Library of Congress

Card 4/4

5(4), 5(1)
AUTHOR: Kalinina, A. M.

SOV/78-4-6-8/44

TITLE: On the Polymorphism and the Course of the Thermal Transformations of Aluminum Oxide (O polimorfizme i khode termicheskikh prevrashcheniy okisi alyuminiya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 6, pp 1260-1269 (USSR)

ABSTRACT: In the present paper a systematic investigation of the course of the thermal transformation of the aluminum oxide that is produced from different chemical compounds was carried out in dependence on the thermal treatment . Various chemical compounds (gibbsite, aluminum nitrate, and aluminum sulphate) which were transformed into aluminum oxide by thermal treatment were used as samples. The investigations were carried out by means of the thermal analysis and the X-ray phase analysis. Figure 1 gives the thermogram of gibbsite, figure 2 the X-ray intensity curves of gibbsite at temperatures of from room temperature to 1100°. Figure 4 shows the thermograms of aluminum nitrate and aluminum sulphate. The X-ray intensity curves of aluminum nitrate which are formed within the temperature range of from 600-800°, 850-900° and 1100°(a, b, v), and those of

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On the Polymorphism and the Course of the Thermal Transformations of Aluminum Oxide

aluminum sulphate at 900 and 1250° (g - d) are given in figure 5. The thermal transformation of aluminum oxyhydrate is expressed by the following scheme:

$$Al(OH)_3\ \text{gibbsite} \xrightarrow{190^\circ} \{Al(OH)_3\ \text{X-phase}\ 200^\circ\} \xrightarrow{260^\circ} \{AlOOH\ \text{X-phase}\ \gamma_H\text{-}Al_2O_3\ \text{high-dispense}\ 375^\circ\} \xrightarrow{435^\circ} \{Al_2O_3\ \text{amorphous}\ \gamma_H\text{-}Al_2O_3\ \text{high-dispense}\ 500^\circ\}$$

The scheme of the thermal transformation of aluminum from gibbsite is the following:

$$\{Al_2O_3\ \text{amorphous}\ \gamma_H\text{-}Al_2O_3\ \text{high-dispense}\} \xrightarrow{600^\circ} \{Al_2O_3\ \text{amorphous}\ \gamma_H\text{-}Al_2O_3\ 600\text{-}900^\circ\} \xrightarrow{900^\circ} \{\alpha\text{-}Al_2O_3\ 800\text{-}900^\circ\ \theta\text{-}Al_2O_3\ 900\text{-}940^\circ\} \xrightarrow{1050\text{-}1200^\circ} \alpha\text{-}Al_2O_3$$

$$\{Al_2O_3\ \text{amorphous}\ \gamma_H\text{-}Al_2O_3\ \text{high-dispense}\} \xrightarrow{600^\circ} \{Al_2O_3\ \text{amorphous}\ \gamma_H\text{-}Al_2O_3\ 600\text{-}900^\circ\} \xrightarrow{900^\circ} \{\alpha\text{-}Al_2O_3\ 800\text{-}900^\circ\ \theta\text{-}Al_2O_3\ 900\text{-}940^\circ\} \xrightarrow{1050\text{-}1200^\circ} \alpha\text{-}Al_2O_3$$

The scheme of the thermal transformation of aluminum oxide from aluminum nitrate is the following:

On the Polymorphism and the Course of the Thermal Transformations of Aluminum Oxide

SOV/78-4-6-8/44

$$Al(NO_3)_3 \xrightarrow{280^\circ} \left\{ \begin{matrix} Al(NO_3)_3 \\ Al_2O_3 \\ \text{amorphous} \\ 380^\circ \end{matrix} \right\} 525^\circ \left\{ \begin{matrix} Al_2O_3 \\ \text{amorphous} \\ 525\text{-}825^\circ \end{matrix} \right\} 825^\circ \left\{ \begin{matrix} \gamma_H\text{-}Al_2O_3 \\ 850^\circ \end{matrix} \right\} \xrightarrow{1000^\circ} \underset{1050^\circ}{\alpha\text{-}Al_2O_3}$$

The scheme of the thermal transformation of aluminum oxide from aluminum sulphate is the following:

$$Al_2(SO_4)_3 \xrightarrow{700^\circ} \left\{ \begin{matrix} Al_2(SO_4)_3 \\ Al_2O_3 \text{ - amorphous} \\ \gamma_H\text{-}Al_2O_3 \\ 900^\circ \end{matrix} \right\} \xrightarrow{945^\circ} \left\{ \begin{matrix} \gamma_H\text{-}Al_2O_3 \\ 945\text{-}1200^\circ \end{matrix} \right\} \xrightarrow{1200\text{-}1250^\circ} \alpha\text{-}Al_2O_3$$

In these schemes the temperatures in brackets correspond to a maximum of the heat effect or to stabilization regions. The formation of the polymorphous modification and the course of the thermal transformation of the aluminum oxide depend on the chemical initial compounds and the type of the thermal treatment. There are 5 figures and 28 references, 15 of which are Soviet.

Card 3/3

Inst. Chem. of Silicates, AS USSR

S/078/61/006/009/004/010
B107/B101

AUTHOR: Kalinina, A. M.

TITLE: Peculiarities of the silicon dioxide transformation in the course of the thermal reactions of synthetic kaolinite

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 9, 1961, 2109 - 2119

TEXT: R. R. West (Ref. 10. see below) stated that silicon monoxide forms during the heating of kaolin minerals. The authors conducted the present study in order to determine the temperature of formation, high-temperature transformations and composition of the silicon oxide phase. Synthetic kaolinite was used. It was prepared from alumosilicate gel at 300°C, in saturated water vapor, in 24 hr. The investigation was conducted with a X-ray diffractometer which permitted heating of the specimens up to 1400°C in a KO-16 (KO-16) furnace while recording the radiograph. Loss in weight between 800 and 1350°C, infrared spectra and microscopic composition (conducted by I. A. Bondar') were also investigated. Result: Mullite and amorphous silicon dioxide forms during heating of synthetic kaolinite. The silicon dioxide crystallizes as cristobalite at 1300°C. This high-tempera-

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Peculiarities of the silicon dioxide ...

ture cristobalite remains stable at room temperature; the conversion into the low-temperature form is probably inhibited by mullite. The high-temperature cristobalite melts at 1370°C, probably through the effect of small amounts of sodium oxide. Silica glass forms from this melt during rapid cooling in air. If this glass is heated to 1000°C, high-temperature cristobalite forms again. The formation of silicon monoxide alleged by R. R. West could not be confirmed. Studies by I. B. Kaynarskiy (Dokl. AN SSSR, 84, 887 (1951)), E. V. Degtyareva (Byull. nauchno-tekhnicheskoy informatsii, Metallurgizdat, v. 4, p. 51, 1958) and N. N. Sinel'nikov (Dokl. AN SSSR, 110, 651((1956)) are mentioned. There are 4 figures and 40 references: 25 Soviet and 15 non-Soviet. The three most important references to English-language publications read as follows: Ref. 4: H. D. Glass, Amer. Miner, 39, 193 (1954); Ref. 5: G. W. Brindley, K. Hunter, Miner. Mag. and J. Miner. Soc. 25, 574, (1955); Ref. 10: R. R. West. Amer. Ceram. Soc. Bull., 36, 55 (1957).

ASSOCIATION: Institut khimii silikatov Akademii nauk SSSR (Institute of Silicate Chemistry AS USSR)

SUBMITTED: July 26, 1960

Card 2/2

OL'DEKOP, Yu.A.; KALININA, A.M.

Reactions of carbon tetrachloride with benzene homologues. Zhur. ob.khim. 30 no.10:3358-3361 O '61. (MIRA 14:4)

1. Belorusskiy gosudarstvennyy universitet.
(Carbon tetrachloride) (Aromatic compounds)

OL'DEKOP, Yu.A.; KALININA, A.M.; SHKLYAR, S.A.

New method of synthesizing acid chlorides and acid bromides of aromatic acids. Dokl. AN SSSR 139 no.6:1383-1385 Ag '61. (MIRA 14:8)

1. Belorusskiy gosudarstvennyy universitet im. V.I. Lenina.
(Acids, Organic)
(Halides)

ACCESSION NR: AT4019285 S/0000/63/003/001/0053/0066

AUTHOR: Kalinina, A. M.; Filipovich, V. N.; Kolesova, V. A.; Bondar', I. A.

TITLE: Crystallization produces of lithium silicate glass

SOURCE: Simpozium po stekloobraznomu sostoyaniyu. Leningrad, 1962. Stekloobraznoye sostoyaniye, vyp. 1: Katalizirovannaya kristallizatsiya stekla (Vitreous state, no. 1: Catalyzing crystallization of glass). Trudy* simpoziuma, v. 3, no.1. Moscow, Izd-vo AN SSSR, 1963, 53-66

TOPIC TAGS: glass, silicate, lithium, glass crystallization, spectroscopy, absorption spectrum

ABSTRACT: The crystallization of glass of the Li_2O-SiO_2 system was investigated and the succession of crystalline phases was found to depend on the composition of the crystallizing glass and its thermal treatment. Thermograms of glass are plotted and the problem of the existence of solid silica solutions in lithium disilicate in the crystallization products of glass of high silica content is discussed. The investigation was carried out by x-ray, thermographic and microscopic methods, as well as by means of infrared absorption spectra. Two kinds of samples were studied:

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ACCESSION NR: AT4019285

some were found to range from the eutectic composition (30 mol.% Li_2O) to pure SiO_2, and others were found to be of a composition ranging from metasilicate to disilicate (36-48 mol.% Li_2O). The temperatures of crystallization were 430, 480, 630, 900-960 C; time: 1-100 hours. Some samples were subjected to thermal treatment over a temperature range of 430-960 C. The appearance of the different crystalline structures (lithium disilicate, metasilicate, cristobalite, tridymite) in relation to the varying experimental conditions is discussed in detail. Orig. art. has: 7 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 17May63 DATE ACQ: 21Nov63 ENCL: 00

SUB CODE: MT, OP NO REF SOV: 007 OTHER: 008

Card 2/2

KALININA, A.M.

Thermal transformations of aluminosilicate gels. Zhur. neorg. khim. 8 no.7:1678-1687 Jl '63. (MIRA 16:7)

1. Institut khimii silikatov AN SSSR.
(Aluminosilicates--Thermal properties)

KALININA, A.M.

High temperature transformations of synthetic kaolinite. Zhur. neorg. khim. 8 no.12:2675-2684 D '63. (MIRA 17:9)

1. Institut khimii silikatov AN SSSR.

KALININA, A. M.; FILIPPOVICH, V. N.

"Peculiarities of crystallization of some lithium silicate and lithium alumosilicate glasses."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad, 16-21 Mar 64.

OL'DEKOP, Yu.A.; KALININA, A.M.

Thermal reactions of polyhalomethanes with aldehydes. Zhur. ob. khim. 34 no.10:3473-3478 O '64. (MIRA 17:11)

1. Belorusskiy gosudarstvennyy universitet im. Lenina.

L 00461-66 EWT(m)/EWP(1)/EWP(b)/EWP(e) WH/GS

ACCESSION NR: AT5013391 UR/0000/65/000/000/0124/0134

AUTHOR: Kalinina, A. M.; Filipovich, V. N. 23 B+7

TITLE: Study of the crystallization sequence during heating of lithium aluminosilicate glasses

SOURCE: AN SSSR, Institut khimii silikatov. Strukturnyye prevrashcheniya v steklakh pri povyshennykh temperaturakh (Structural transformations in glass at high temperatures). Moscow, Izd-vo Nauka, 1965, 124-134

TOPIC TAGS: glass crystallization, lithium aluminosilicate, lithium glass, glass structure, x-ray diffraction

ABSTRACT: The article is devoted to an x-ray diffraction study of the crystallization of certain glasses of the ternary system Li_2O-Al_2O_3-SiO_2 during heating starting at low temperatures. Low-temperature crystallization proceeds by overcoming the lowest energy barriers, which leads to the formation of metastable crystalline phases. On prolonged exposures to high temperatures, recrystallization into stable phases takes place in accordance with the phase diagram. Emphasis is placed on the close relationship between the structures of the initial glass and the crystalline phases which first precipitate at low temperatures. It is concluded that glass of the spodumene composition and other

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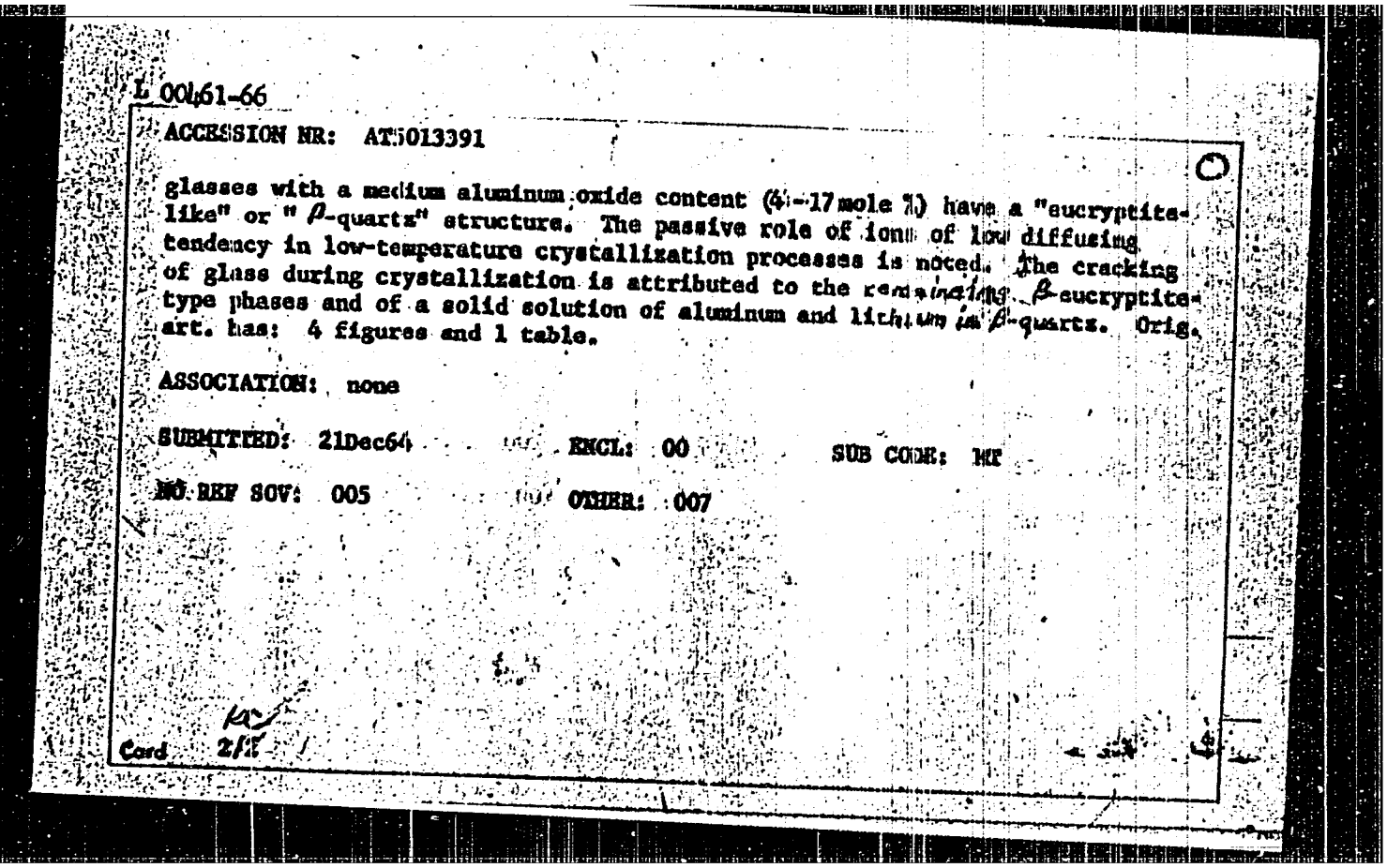

L 00461-66

ACCESSION NR: AT5013391

glasses with a medium aluminum oxide content (4-17 mole %) have a "eucryptite-like" or "β-quartz" structure. The passive role of ions of low diffusing tendency in low-temperature crystallization processes is noted. The cracking of glass during crystallization is attributed to the remaining β-eucryptite-type phases and of a solid solution of aluminum and lithium in β-quartz. Orig. art. has: 4 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 21Dec64 ENCL: 00 SUB CODE: MT

NO REF SOV: 005 OTHER: 007

Card 2/2

L 2286-66 EWP(e)/EWT(m)/EPF(c)/EWP(i)/T/EWP(t)/EWP(b)/EWA(c) LJP(c) JD/WH

ACCESSION NR: AP5022274 UR/0363/65/001/007/1189/1200
546.41+546.46+546.284

AUTHOR: Kalinina, A. M.; Filipovich, V. N.

TITLE: Crystallization of glasses of the $CaO - MgO - SiO_2$ system

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 7, 1965, 1189-1200

TOPIC TAGS: silicate glass, crystallization

ABSTRACT: The paper presents results of an X-ray diffraction study of crystallization of calcium magnesium silicate glasses during heating for the purpose of determining their usefulness as starting substances for the development of new glass-crystalline materials. The glass compositions considered correspond to the two chemical compounds $CaO \cdot MgO \cdot 2SiO_2$ (diopside) and $2CaO \cdot MgO \cdot 2SiO_2$ (okermanite) and a series of eutectics. X-ray phase analysis was the principal method employed; additional methods were thermographic and microscopic analyses. The crystallization was carried out either by a single stage or a multistage thermal treatment. A tendency for metastable crystalline phases rich in alkaline earth oxides to precipitate first was observed. A possible interpretation of the lines obtained is given in terms of the chemically inhomogeneous structure of the

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L 2285-66

ACCESSION NR: AP5022274

melt and glass, and also in terms of the kinetics of fluctuational nucleation of a new crystalline phase in the complex glass. Orig. art. has: 5 figures and 2 tables.

ASSOCIATION: Institut khimii silikatov Akademii nauk SSSR (Institute of Silicate Chemistry, Academy of Sciences, SSSR)

SUBMITTED: 03Mar65 ENCL: 00 SUB CODE: MF, GC

NO REF SOV: 008 OTHER: 002

Card 2/2

ACCESSION NR: AT4042705 S/0000/63/000/000/0368/0371

AUTHOR: Myasnikov, A. L.; Akhrem-Akhremovich, R. M.; Kakurin, L. I.; Punkkar', Yu. T.; Mukharlyamov, N. M.; Georgiyevskiy, V. S.; Tokarev, Yu. N.; Senkevich, Yu. A.; Katkovskiy, B. S.; Kalinina, A. N.; Cherepakhin, M. A.; Chichkin, V. A.; Filosofov, V. K.; Shamrov, P. C.

TITLE: Effect of prolonged hypokinesia on blood circulation in man

SOURCE: Konferentsiya po aviatsionnoy i kosmicheskoy meditsine, 1963. Aviatsionnaya i kosmicheskaya meditsina (Aviation and space medicine); materialy konferentsii. Moscow, 1963, 368-371

TOPIC TAGS: isolation, prolonged isolation, isolation chamber, isolation effect, bioelectric activity

ABSTRACT: Four young men 22 to 24 were subjected to voluntary bedrest for a period of 20 days. Tests on pulse, arterial pressure, rate of blood flow, venous pressure, etc., were run before and after the completion of the experiment. These tests were performed at rest and after functional exercises (30 knee bends at the rate of one every 1.5 sec). During the period of bedrest, pulse frequency diminished on the average by 14 strokes per minute; the arterial pressure diminish-

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ACCESSION NR. AT4042705

ed by 11.2 mm of Hg. Stroke volume diminished on the average by 6 ml, while the minute rate of blood flow was reduced by 1.6 liters. After completion of the bed regime, pulse frequency rose by 18 to 34 strokes per minute, while systolic pressure and minute blood volume increased. Deep knee bends brought about characteristic increases in the pulse rate and changes in arterial pressure and phases of the cardiac cycle. The length of time required for these indices to return to normal increased from three minutes to seven minutes. It can be assumed that similar functional changes in the cardiovascular system will take place in man after his return to normal gravity following prolonged weightlessness.

ASSOCIATION: none

SUBMITTED: 27Sep63 ENCL: 00 SUB CODE: LS

NO REF SOV: 000 OTHER: 00

Card 2/2

L 14272-66 EWT(1)/FS(v)-3 SCTB DD/RD

ACC NR: AT6003837 SOURCE CODE: UR/2865/65/004/000/0027/0030

AUTHOR: Georgiyevskiy, V. S.; Kakurin, L. I.; Kalinina, A. M.; Katkovskiy, B. S.; Kustov, V. V.; Mikhaylov, V. I.; Pilipyuk, Z. I.; Tokarev, Yu. N.

ORG: none

TITLE: Effects of eight-hour isolation and hypokinesia on several physiological and biochemical indices in man

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy kosmicheskoy biologii, v. 4, 1965, 27-30

TOPIC TAGS: isolation test, hypokinesia, test chamber, respiration, human physiology, biochemistry, man, EKG, blood pressure, blood circulation, physiologic parameter

ABSTRACT: A study was performed in order to determine the effects of short-term isolation and hypokinesia on the basic physiological and biochemical indices of man. Ten young men, 21--24 years of age, were kept for 8 hours in a sitting position in a hermetically sealed chamber with forced ventilation of atmospheric air. The oxygen content was 20—21%, and the CO_2 content was 0.01—0.03%. The temperature varied between 20—22° C and the relative humidy between 50—60%. The parameters measured included the

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standard EKG, pulse frequency, arterial blood pressure, stroke and minute volumes of blood circulation, peripheral resistance, and the cardiac index. In addition, the frequency, depth, and per minute volume of respiration were measured, along with oxygen consumption, the coefficient of oxygen utilization, the amount of oxygen consumed from 1 liter of air, the vital capacity of the lungs, and certain other indices.

After 8 hours of isolation and hypokinesia, the majority of the subjects showed a diminution in pulse frequency (16%), an insignificant increase in stroke volume (11%), a diminution in per minute volume, and an increase in peripheral circulatory resistance (23%). Except for a slight tendency to bradycardia, the EKG did not show any deviations. Although changes in the respiratory functions were varied, they did not exceed limits of normal physiological-variation, except for a tendency toward retardation of forced exhalation of air of about 0.5 sec. After physical exercise, oxygen debt in most of the subjects was cancelled somewhat sooner, while ventilation debt was cancelled more slowly. Energy expenditures required by physical exercise dropped after the experiment at the expense of a diminution in oxygen debt. The number of errors in psychological (intelligence) tests

L 14272-66

ACC NR: AT6003837

tended to increase toward the end of the experiment, indicating a certain degree of inertia in nervous processes. The amount of carboxyhemoglobin in the blood diminished from 1.48 ± 0.48 to 0.51 ± 0.26 after the experiment and, the catalyzing activity of the blood increased. Both of these changes were statistically significant. The cholinesterase activity of the blood serum diminished by 8.8%. No significant changes were noted in the urea content of the blood. At the same time, the amount of ammonia and urea in urine tended to diminish. In general, 8 hours of isolation and hypokinesia did not lead to any substantial functional shift in the human organism. Orig. art. has: 3 tables. [ATD PRESS: 4091-F]

SUB CODE: 06 / SUBM DATE: none / ORIG REF: 004 / OTH REF: 002

PC

Card 3/3

L 14266-66 EWT(1)/FS(v)-3 SCTB DD/RD

ACC NR: AT6003842 SOURCE CODE: UR/2865/65/004/000/0075/0079

AUTHOR: Kustov, V. V.; Mikhaylov, V. I.; Pilipyuk, Z. I.; Tokarev, Yu. N.; Georgiyevskiy, V. S.; Katkovskiy, B. S.; Kalinina, A. N.

ORG: none

TITLE: Changes in several physiological and biochemical indices in man after exposure to small concentrations of carbon monoxide

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy kosmicheskoy biologii, v. 4, 1965, 75-79

TOPIC TAGS: carbon monoxide, respiration, human physiology, test chamber, man, biochemistry, blood, central nervous system

ABSTRACT: Experiments were performed on young adult men in order to test the effects of carbon monoxide on certain biochemical indices. Each subject participated in an eight-hr background experiment (effect of hermetization) and an eight-hr experiment on the effects of carbon monoxide. A carbon monoxide concentration corresponds to the concentration of carbon monoxide exhaled by humans. The CO_2 concentration in the chamber did not exceed 0.6%, the air temperature was 18—22° C, the relative humid-

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ity was 50—60%. The catalyzing activity of the blood, the activity of cholinesterase in blood serum, and the carboxyhemoglobin content of blood were measured in all subjects before and after the experiment. In addition standard EKG, blood pressure, oxygen consumption, and oxygen utilization were also measured. The subjects were also given mathematical problems to solve.

After an exposure of six to seven hours, the subjects manifested certain functional shifts in the cardiovascular system and external respiration, and also an increase in errors in test performance. The P, R, and T points of the EKG showed a drop in voltage. The QRS complex tended to expand (sometimes accompanied by an increased heart rate). The number of errors in all arithmetic tests showed a substantial increase.

After an eight-hr exposure to carbon monoxide, the carboxyhemoglobin content of the blood increased from 0.66 ± 0.056% to 1.58 ± 0.43%. This was accompanied by a statistically significant increase in the cholinesterase activity of the blood serum. The catalyzing activity of the blood did not change.

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ACC NR: AT6003842

An analysis of the data obtained makes it possible to assume that the minute physiological shifts observed in man after exposure to carbon monoxide cannot be explained as simply the result of carbon monoxide hypoxemia, since the carboxyhemoglobin contant of the blood did not exceed 1.58%. It is felt that these changes are due to the effect of carbon monoxide on tissues and that this tissue effect must be taken into account in setting standards of permissiable concentration of carbon monoxide in the air of hermetically sealed chambers. Orig. art. has: 3 tables. [ATD PRESS: 4091-F]

SUB CODE: 06 / SUBM DATE: none / ORIG REF: 006 / OTH REF: 004

Card 3/3

ACC NR: AT6036573 SOURCE CODE: UR/0000/66/000/000/0188/0189

AUTHOR: Kalinina, A. N.; Stepanov, B. G.; Shugam, Ye. I.
ORG: none

41

TITLE: Visual image recognition and visual determination of the degree of similarity between images [Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24 to 27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 188-189

TOPIC TAGS: vision, pattern recognition, space psychology, visual test

ABSTRACT: In previous experiments, one of the authors, using a special electronic assembly, observed an artificially retarded process of pattern recognition. Based on this observation, a description of the characteristic peculiarities of two approaches to recognition was given: The use of one yields a small number of errors but is characterized by the retardation of the recognition process; the use of the second is characterized by more rapid recognition but a higher number of errors. After analyzing the experimental data, it was proposed that under certain reception conditions, the speed of recognition prevailed with no substantial loss of accuracy.

The verification of this observation was one of the purposes of the present investigations. Another aim was to reveal the nature of

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connection between recognition and the similarity of certain patterns.

Simple, contour patterns were used. The contour was broken down into portions of equal length. By erasing various portions, lined patterns containing various amounts of information were derived. The position of the lines was arranged using a table of random numbers. The patterns were arranged in three groups according to the amount of information. The pattern presentation proceeded from a small to a large amount of information. The order of presentation within groups was random and uniform for all subjects.

Two series of experiments were conducted. First, tests for recognition of graphic patterns were conducted. Here the two methods of recognition were revealed and it was demonstrated that the second method had the advantage of higher speed and quantity of test objects to be recognized for the majority of patterns in a given class.

To solve the problem of the link between recognition and similarity, a second series of experiments was conducted in which the similarity of a pattern to its standard was measured. It was necessary to compose a series with progressive similarity, i.e., each subsequent

pattern had to be more similar than the preceding to its standard. A number was assigned to each pattern. The distribution of numbers assigned to a given pattern by various subjects was constructed and the mathematical prediction and dispersion of distributions was calculated. Later, the mathematical prediction was used to evaluate the degree of pattern similarity with its standard. After processing these results, it was possible to isolate 9 of 20 patterns in each series which significantly differed from the standard.

Experimental verification of these patterns according to the same scheme used in a preceding test showed that of ten subjects, eight assigned a given pattern the same number and that the distribution of pattern numbers in the abridged and unabridged series was identical. [W.A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

KALININA, A.P.

Conditioned reactions in the treatment with atropine of chronic encephalitis and of chronic alcoholism. Zh. vyssheĭ nerv. deiat. Pavlova 1 no.3:392-398 May-June 1951. (CLML 23:2)

1. Psychiatric Clinic, Gor'kiy Medical Institute.

KALININA, A. P.

7801, KALININA, A. P.---860 Grammov privesa molodnyaka v sutki (rasskaz telyatnitsy kolkhoza "krest'yanin" [illegible] Rayona. [illegible] I. Kalinina) Gor'kiy, Kn. IZ d. 1954. 15 s. s [illegible] (Obl. s-kh. [illegible] propagandy I nauki. Peredoviki zhivotnovodstva o svoyem opyte). 2.000 [illegible] --vlozhena s 9-yu drugimi knigami etoy serii v [illegible] zagl. serii.--- (55-3935) 636.2.083.37 st (47.37)

SO: Knizhnaya Letopis', Vol. 7, 1955